



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-----------------------|---------------------|------------------|
| 09/413,462 | 10/06/1999 | EDUARD ALBERT CARTIER | 12906(YO999- | 2041 |

7590

06/04/2002

RICHARD L CATANIA
SCULLY SCOTT MURPHY & PRESSEER
400 GARDEN CITY PLAZA
GARDEN CITY, NY 11530

EXAMINER

CRUZ, LOURDES C

ART UNIT PAPER NUMBER

2827

DATE MAILED: 06/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/413,462

Applicant(s)

CARTIER ET AL.

Examiner

Lourdes C. Cruz

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-31,33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-31, 33,34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 22 March 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: See that two new figures (10 and 11) have been added. However, the specification has been amended to include a brief description ONLY for Figure 10. A brief description for newly added figure 11 is necessary.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21-24, 26-31 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones, Jr. (US 5313089).

Jones teaches:

Claim 21: a semiconductor structure (See Fig. 8) comprising at least one metal silicate 36 formed in direct contact with a silicon oxide layer 34 (Col. 3, lines 7-10; 45-50); said silicon oxide layer 34 being formed on a Si-containing substrate 12.

Regarding claims 22-24 and 29-31, Jones discloses such layer being a La silicate (See Col 4, lines 50+).

Regarding claim 26, see Col. 8, lines 55+ -- Also see Col. 5, lines 50+-- wherein Jones discloses the claimed thickness.

Regarding claim 27, see that Jones teaches all the structural limitations as claimed and as discussed above. It is inherent that Jones device will behave similarly as the device claimed under the same circumstances and would have the same leakage current/capacitance as those claimed.

Claim 28: Jones teaches a field effect transistor comprising a Si-containing semiconductor substrate 12; spaced apart source and drain regions (16,18) in said substrate defining a channel region therein; a dielectric layer 42 located atop said channel region, said dielectric including a bottom SiO layer 30 (Col. 3, lines 47-50) and a top La-silicate layer 36. Jones also teaches --See Fig. 10--alternate embodiments wherein said metal silicate is formed underlying said electrode region (See Col. 8, lines 50-54).

Claim 34: Jones discloses a metal silicate 36 and a SiO layer 34 (Col. 3, lines 7-10;45-50) sandwiched between top 38' and bottom 26 electrode materials, wherein said at least one metal silicate is directly atop said SiO layer 34.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim **25** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones Jr.

See that the prior art does not specifically teach the claimed thickness. However, such limitation does not cause any critical or unexpected results to the device's operation. Rather it is merely an obvious design choice determined by routine experimentation. In *Aller*, the court stated "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456 105 USPQ 233,235 (CCPA 1995).

See that Jones silence on this specific thickness is considered to suggest any workable thickness range. Therefore, it would have been obvious to modify the thickness of the oxide layer in order to increase/decrease isolation.

Claim **33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, Jr. in view of Wright (US 6236094).

See that Jones teaches the FET transistor as claimed, said FET including a gate electrode 26. Jones, however, fails to specifically disclose that the material of which such gate is being formed comprises polysilicon, tungsten, aluminum or Pt. However, see that Wright teaches the use of such in order to obtain the desired resistivity. It would have been obvious for one with skill in the art to combine the teachings of Wright to

those of Jones in order to form gate electrodes comprising polysilicon, tungsten, aluminum for the purpose of controlling resistivity.

Response to Arguments

Applicant's arguments with respect to claims 21-34 have been considered but are moot in view of the new grounds of rejection, which was necessitated by the amendment.

Applicant's remark that Jones, Jr. "provide no teaching of forming the high-permittivity material atop a SiO layer which is formed atop a Si-containing substrate" is not persuasive since the prior art clearly shows (see Fig. 8) La-silicate 36 formed on layer 34; layers 36 and 34 are formed atop silicon-containing substrate 12.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2815

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lourdes C. Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 8:00- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz
Examiner
Art Unit 2815



Lourdes Cruz
May 26, 2002



DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800